Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Targeted Changes to the Commission's	)	ET Docket No. 19-226
Rules Regarding Human Exposure to	)	
Radiofrequency Electromagnetic Fields	)	

JOINT REPLY COMMENTS OF THE WPT MANUFACTURERS

The WPT Manufacturers are a group of U.S. developers and manufacturers of systems that perform wireless power transfer ("WPT"), most of whom have commented on the Federal Communications Commission's ("FCC" or "Commission") proposals in this proceeding related to WPT.[1/] The WPT Manufacturers are filing these Joint Reply Comments to demonstrate the broad agreement within the industry for the appropriate regulation of WPT devices. The WPT Manufacturers urge the Commission to act expeditiously to provide much-needed regulatory clarity for the industry.

The WPT Manufacturers agree on the following points:

- **Systems that provide wireless power transfer are ISM (Industrial, Scientific, or Medical) equipment.** There is general agreement that the appropriate regulatory treatment of WPT is as ISM equipment under Part 18. Furthermore, manufacturers support the use of Part 18 to regulate the use of the technology. While Energous proposed a new rule part for WPT, it believes that regulation under Part 18 also could be a workable solution. As ISM equipment, WPT should not be subject to specific power limitations.

- **ISM frequencies are the appropriate bands on which WPT may operate.** The joint commenters support allowing WPT on all ISM frequencies.

- **The term "local" in Part 18 has no meaningful purpose today.** This legacy term in the ISM rules is colloquially descriptive of the technologies that were being developed and evaluated at the time the rules were promulgated, but it has no definitional meaning or consequence beyond that frame of reference. In the larger context of the ISM rules, it is clear that "local" merely is a proxy expression for the Commission's essential concerns, which remain today throughout its radio regulations: management of electro-magnetic

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1/ The WPT Manufacturers are: Energous Corporation; GuRu Wireless, Inc.; MetaPower, LLC; Nikola Labs, Inc.; Ossia Inc.; and Reach Labs (hereinafter, "WPT Manufacturers"). Appendix A provides a brief description of each entity.

compatibility ("EMC") and radiofrequency ("RF") exposure. Given that RF safety rules have subsequently been adopted, and given the imprecision, uncertainty and even confusion engendered by the term, as well as its current irrelevance, the Commission should clarify that with regard to WPT the term "local" does not imply a specific limitation on distance.

- **The only factors that the FCC must consider in authorizing WPT systems are EMC and RF safety.** While the parties may have somewhat differing views on how to demonstrate adherence to the RF safety rules (which may be provided in separate comments), all agree that the key consideration is the amount of energy to which a human may be exposed. Measurements, simulations and demonstrably reliable calculations may all be appropriate for demonstration of RF safety.

- **Current Commission rules in Parts 1, 2, 15, and 18 already provide for EMC and RF safety for WPT.** No additional rules are necessary. The Commission should simply make clear that the term "local" itself does not limit the distance between WPT transmitters and receivers. The Commission also should provide an updated and modified KDB to set out more explicit testing and approval mechanisms. Novel technologies not yet addressed in that KDB may be submitted for specific KDB inquiries, ensuring that adequate and tailored testing always occurs before any WPT system is authorized. The WPT Manufacturers recognize the importance of radiofrequency exposure and compatibility with other radio devices for their systems – their customers will of course demand it – and are committed to meeting RF exposure limits pursuant to the rules.

- **The FCC should not differentiate – by definition or regulatory scheme – WPT systems based on charging distance.** All parties generally agree that the Commission should not adopt regulations based on the distance between the power transmit and receive units, as other rules already in place will ensure protection from harmful interference and RF safety. We note that the CISPR recommendation of 50 cm operating distance is inapplicable to these systems, as that proposal applies to inductive rather than radiative WPT at issue here.

- **The Commission should permit WPT devices to engage in non-communications feedback.** This proposal was almost unanimously supported in the docket – with no one raising objections – and has precedence in the treatment of other Part 18 technologies by the Commission.

- **WPT devices should be approved on a "component" basis.** WPT systems are intended to be incorporated into consumer and industrial devices that will require equipment authorization separate and apart from the WPT systems that they utilize. To avoid the need for the WPT component (or sub-system) to be newly authorized for each such device, the Commission should permit WPT systems to be authorized on a component basis.

- **OET should approve WPT systems on a case-by-case basis while this proceeding is pending, and should approve those systems based on existing RF safety and EMC requirements rather than any arbitrary distance or other parameters of those**

systems approved to date. OET has already built a substantial expertise with WPT over the years, and the Commission should continue to encourage the prompt adoption of test plans and authorization requests that are sufficiently supported. In addition, although staff has not yet approved WPT systems operating at a distance over one meter, no particular distance should restrict authorization of WPT systems.

- **The FCC should separate the WPT portion of the NPRM from the RF inquiry.** Time is of the essence for getting WPT technology into the marketplace to support the 5G and IoT revolutions. The WPT Manufacturers support addressing WPT issues separately from the RF inquiry in the NPRM in order to speed WPT resolution.

The WPT Manufacturers thus strongly urge the Commission to move forward expeditiously to bring the benefits of WPT to the U.S. marketplace, in accordance with the above.

Respectfully submitted,

Daniel Lawless
Vice President of Regulatory
Energous Corporation
3590 North First Street, Suite 210
San Jose, CA 95134-1812

Florian Bohn
Chief Executive Officer
GuRu Wireless, Inc.
87 North Raymond Ave.
Pasadena, CA 91103

Guy Lipworth
Co-Founder and Lead Metamaterials Designer
MetaPower, LLC
3150 139th Ave SE
Bellevue, WA 98005

Robert McDonald,
Senior Director, Regulatory Compliance
Ossia Inc.
1100 112th Ave NE Suite 301
Bellevue, WA 98004

Chris Davlantes
Chief Executive Officer
Supply Inc. dba Reach Labs
1195 Park Ave, Suite 211
Emeryville, CA 94608

Will Zell
Chief Executive Officer
Nikola Labs, Inc.
60 Collegeview Rd
Westerville, OH 43081

Appendix A

Energous Corporation: Energous is an award-winning, global leader in next-generation RF-based wireless charging technology. Founded in 2012 and headquartered in San Jose, California, Energous became a publicly traded company in March 2014 (NASDAQ: WATT) and currently holds international regulatory approvals for its WPT technology in 112 countries worldwide, including the United States, European Union, Japan, Taiwan, and India., has been issued 224 patents worldwide, and has over 110 additional patents pending. Energous was the first company to break new ground for WPT-AAD and be awarded an FCC Grant under Part 18 in 2017. Energous' WattUp charging technology is included in the first (and currently the only) RF-charged consumer product available on Amazon.

GuRu Wireless Inc.: GuRu Wireless delivers an ecosystem of wireless power, for electronics untethered from power sources that constrict where and how they're used. By safely projecting energy through the air via its millimeter-wave (mmWave) solution, GuRu goes beyond wires to unleash today's portable devices, including mobile phones, IoT sensors, industrial/warehouse devices, and more. Its proprietary smart RF lensing technology enables rechargeable devices in a way that is cost-effective, scalable and applicable to enterprise or home settings. GuRu is based in Pasadena, Calif., and funded by Kairos Ventures and Bold Capital Partners. Founded by a team of Caltech electrical engineers, applied physicists, and integrated circuit and phased array experts, the company is delivering today what was once thought impossible: a completely wire-free and limitless future.

MetaPower, LLC: MetaPower, a startup based in the Seattle area, is developing WPT remote-charging solutions using cutting-edge beam-forming technology. MetaPower's software-defined antennas generate reconfigurable beams that can focus power on the receiver. MetaPower plans to market devices operating in the ISM bands that can charge industrial IoT devices at a distance of 5 – 100 meters. The ability to deliver steerable, wireless power will revolutionize applications in which a device's performance or operation time are constrained by a limited on-board energy source, or where a wired connection is costly and/or impractical. MetaPower's technology will provide a substantial improvement in many areas, including industrial IoT and robotics.

Nikola Labs, Inc: Nikola Labs is a growth company and spinout of The Ohio State University, founded in 2014. Nikola Labs specializes in full-stack IoT solutions for industrial and manufacturing markets. Nikola serves over 50 manufacturing organizations with Vero, an all-in-one condition monitoring solution. Nikola has developed proprietary WPT technology to enable IoT sensors to be perpetually powered wirelessly from tens of meters away.

Ossia Inc.: Ossia, inventors of Cota® Real Wireless Power ™ is a privately funded technology company based in Bellevue, Washington. Cota, Ossia's patented flagship technology is developed to be licensed by customers, globally, who want to integrate remote wireless power into their products. Uniquely, Cota delivers wireless power using radio frequency over the air and at a distance within manufacturer's products. No charging pads, cables, or disposable batteries required. The award-winning technology has been in development since 2008 and demonstrated at conferences around the world. The Cota technology is currently being licensed by category-leading, Fortune 500 companies and is experiencing explosive ecosystem growth. Ossia is working closely with customers to bring Cota-enabled products to market in 2021.

Supply Inc. dba Reach Labs: Based in Emeryville, California, Reach Labs is a leader in the research, development, and commercialization of performant and economical long-range wireless power networks. With a founding team hailing from MIT and deep ties to Silicon Valley's hard-tech entrepreneurial ecosystem, Reach is uniquely suited to bring the transformational benefits of true wireless power to the industrial sector. Since its founding in 2015, the company has been working closely with key Fortune 500 enterprises and Tier 1 manufacturers to understand the maintenance and infrastructure burdens of digitalization in modern industries. Leveraging advanced adaptive antenna design and powerful optimization techniques, Reach's patented RF-based wireless power technology addresses these challenges to enable safer, greener, and more productive work environments.